International Journal of Medical Science in Clinical Research and Review
Online ISSN: 2581-8945
Available Online at http://www.ijmscrr.in Volume 05|Issue 06 (November-December)|2022 Page: 1228-1234

Original Research Paper

OUTCOME OF VACCINATED AND UNVACCINATED COVID-19 PATIENTS IN A TERTIARY CARE HOSPITAL AT PUDUCHERRY

Authors:

Dr. Suresh[1] , Dr. Rammohan G[2] , Dr. Ramesh Gopi[3]

Head of department, Department of General medicine, Sri Venkateshwaraa Medical College Hospital and Research Centre ,Puducherry, India

Second year Post graduate ,Department of General medicine, Sri Venkateshwaraa Medical College Hospital and Research Centre, Puducherry, India

Assistant Professor, Department of General medicine, Sri Venkateshwaraa Medical College Hospital and Research Centre, Puducherry, India

Corresponding Author:

Dr. Suresh

Head of department, Department of General medicine, Sri Venkateshwaraa Medical College Hospital and Research Centre ,Puducherry, India

Article Received: 29-11-2022 Revised: 15-12-2022 Accepted: 27-12-2022

INTRODUCTION:

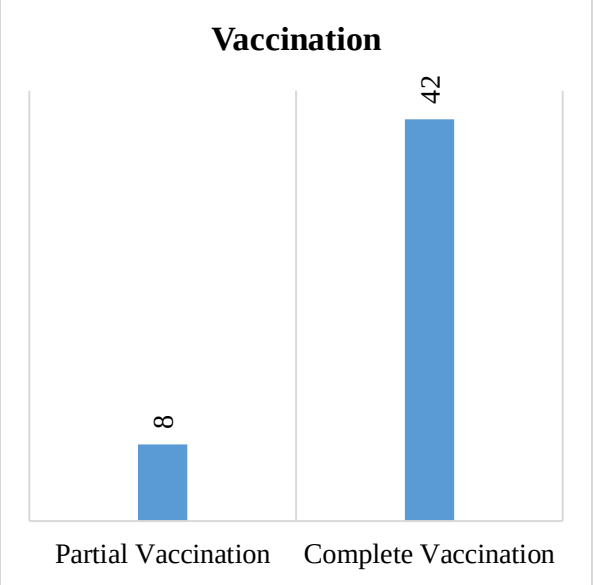
In India, COVID 19 vaccination campaign was started with the Health Care Workers (HCWs) who were directly involved in care of COVID 19 patients w.e.f January 16,2021 with two major vaccines; Covisheild (manufactured by Serum Institute of India) and Covaxin (manufactured by Bharat Biotech Limited) which was given in two doses 12-16 weeks and 4 -6 weeks apart respectively . Later vaccination regime was introduced among the vulnerable population. From 1st May, 2021 the eligible age for vaccination was expanded to cover all adults above 18 years. At present (May 1, 2021) about 268 million people in India have been fully vaccinated.[1] Symptomatic and asymptomatic COVID 19 infections have been reported after COVID 19 vaccination but adequate data regarding breakthrough infections are not available. The efficacy of each vaccine varies. The Covaxin and Covishield have a reported efficacy rate of approximately 81% and 70%, respectively.[2] Since COVID 19 vaccines do not offer 100% protection, breakthrough infections are noted even after vaccination. A vaccine Breakthrough infection is defined as the detection of SARS-Co-2 RNA or antigen in a respiratory sample collected from a person ≥14 days after receipt of all recommended doses of an FDA-authorized COVID-19 vaccine.[3] Indian Council of Medical Research (ICMR) reported breakthrough infection after completing two doses of Covaxin and Covishield of 0.13% and 0.07% respectively.[4] Similar study conducted in Apollo hospital ,India reported the incidence of COVID 19 breakthrough infection of 97.8% in vaccinated Health Care Workers of which only 0.06% patients was in need of hospitalization . Vaccination markedly reduced adverse outcomes. Most COVID 19 patients admitted in ICU were non-immunized. At least one dose of immunization significantly decreases severity of the disease across all ordinal severity categories, and is significantly associated with lower 30 days all-cause mortality.[5] Unvaccinated individuals had a higher ICU admission rate and case fatality rate compared to fully /partially vaccinated. This study is aimed to compare the morbidity and mortality among vaccinated and unvaccinated COVID 19 patients admitted in a tertiary care hospital in Puducherry during the second wave of COVID 19.

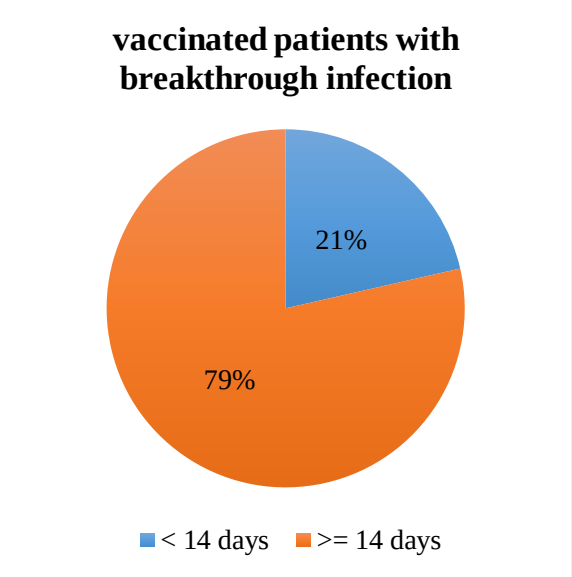
METHODOLOGY:

It is a retrospective cross sectional study conducted in COVID 19 patients who were admitted in a tertiary care hospital at Puducherry during the peak of COVID 19 second wave between June 2021 and September 2021.Candidates were chosen by universal sampling. Clinical characteristics like age, sex, comorbidity, COVID 19 severity by CORADS ,oxygen requirement ,mode of oxygen delivered and outcome were compared between vaccinated and unvaccinated COVID 19 patients. Data were collected by reviewing the case records and vaccination data were entered irrespective of the type of vaccine and number of COVID 19 vaccines doses taken. All data were entered in Exel and analyzed by using SPSS software version 23.0.

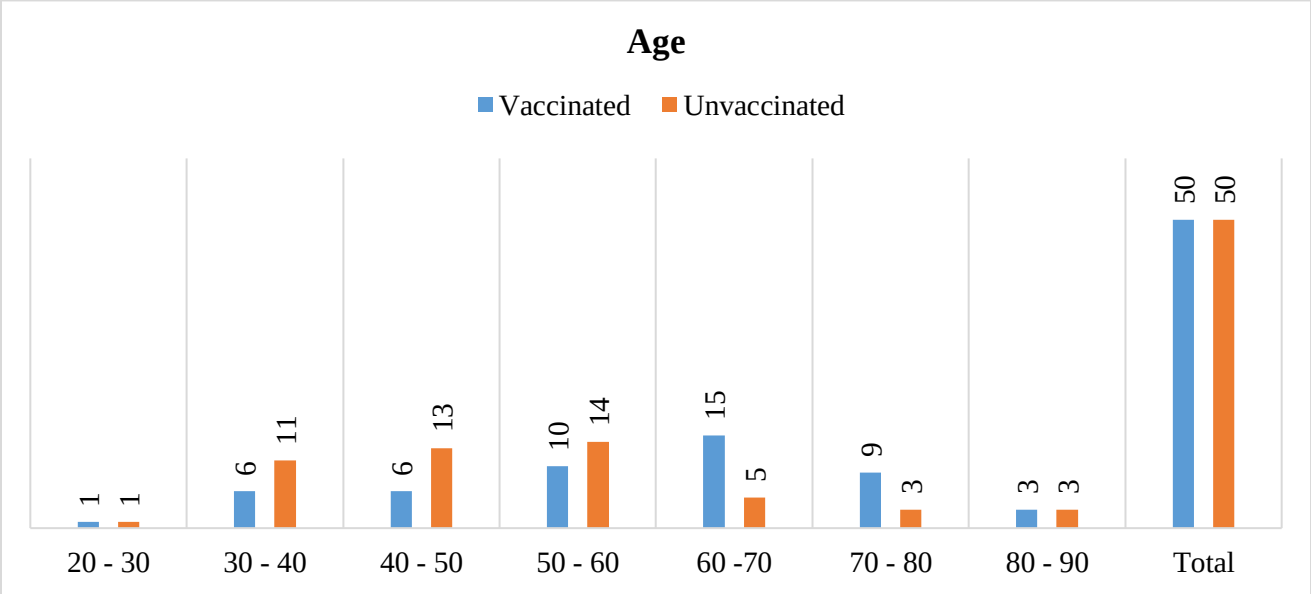
RESULTS:

Out of 100 study populations, 50 patients were COVID 19 unvaccinated and 50 patients were COVID 19 vaccinated. Among vaccinated patients, 42 patients were fully vaccinated (taken two doses of vaccine either Covaxin or Covishield) and 8 patients were partially vaccinated (taken one of two vaccine doses).

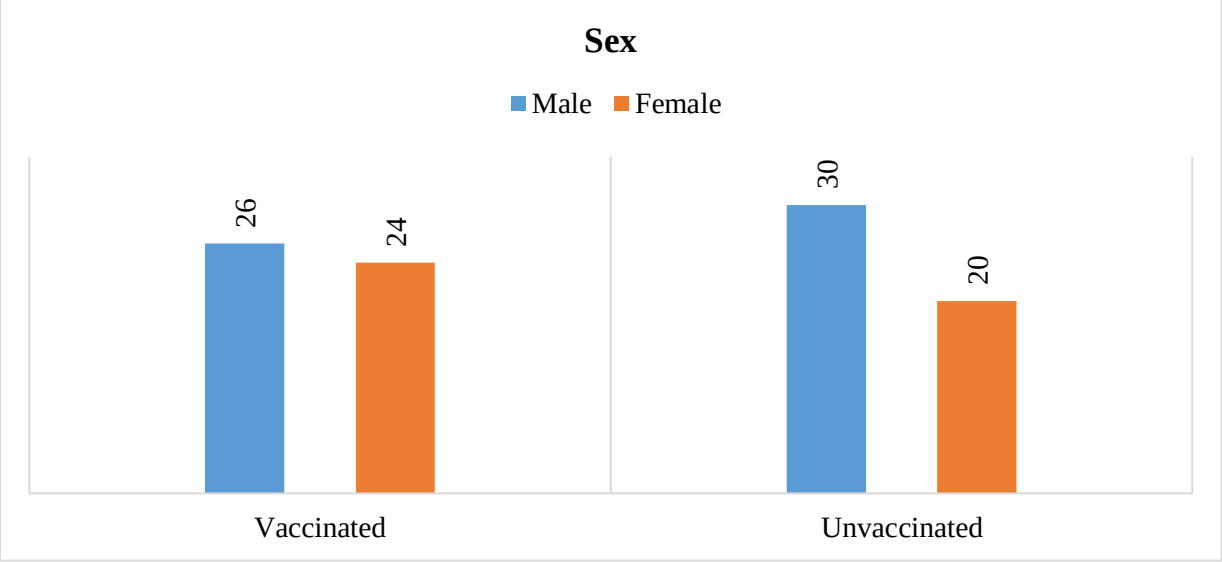




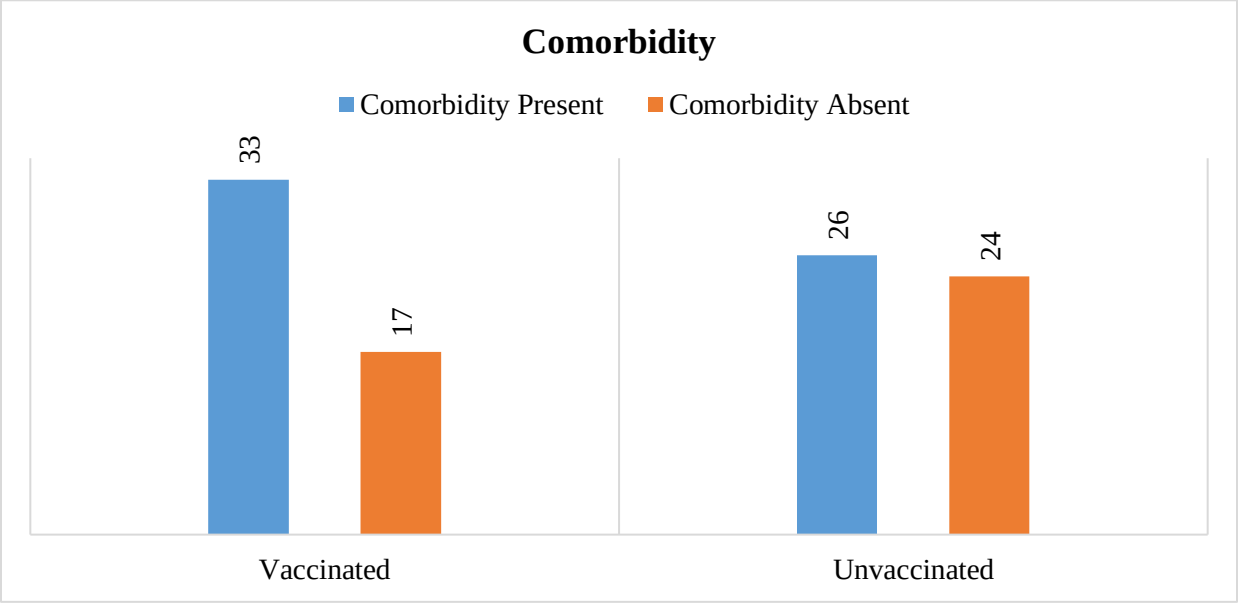
Among fully vaccinated individuals, 33 patients (79%) had breakthrough infection. Breakthrough infection is defined as the detection of SARS-Co-2 RNA or antigen in a respiratory specimen collected from a person ≥14 days after receipt of all recommended doses of an FDA-authorized COVID-19 vaccine.[3]



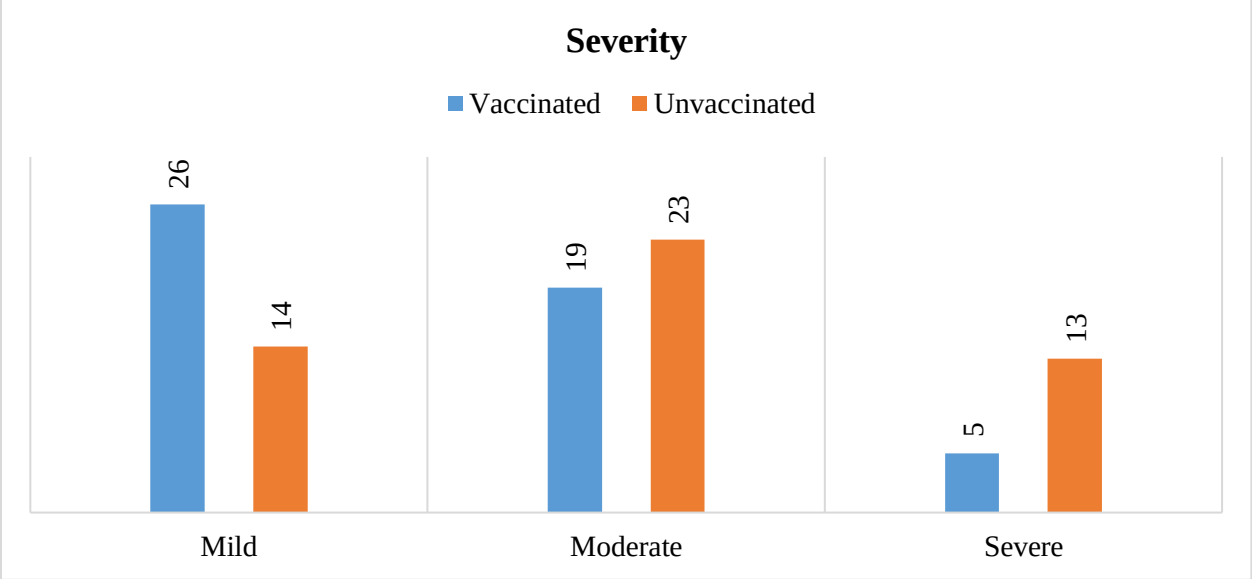
Most of the vaccinated and unvaccinated patient lie in the age group of 60-70 years and 50-60 years respectively, since vaccination program started in individuals above 60years and subsequently those between 45 years and 60 years with co morbidities. The mean age is 58.54 in vaccinated patients and 51.08 in unvaccinated patients.



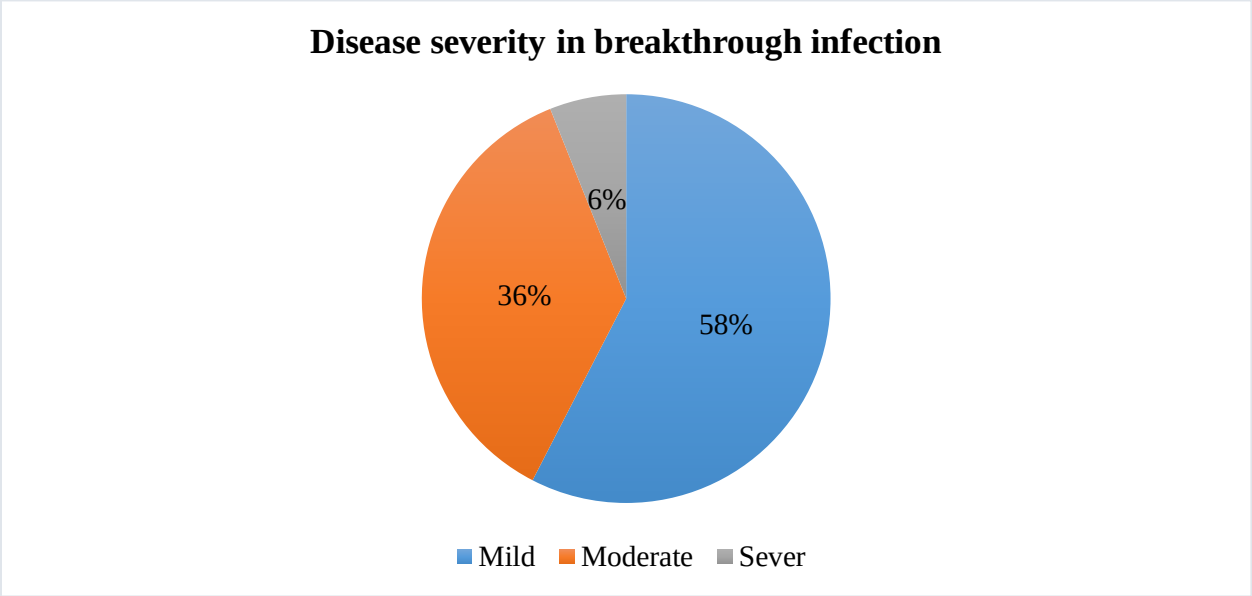
Among 50 vaccinated patients, 26 patients were male and 24 patients were female.



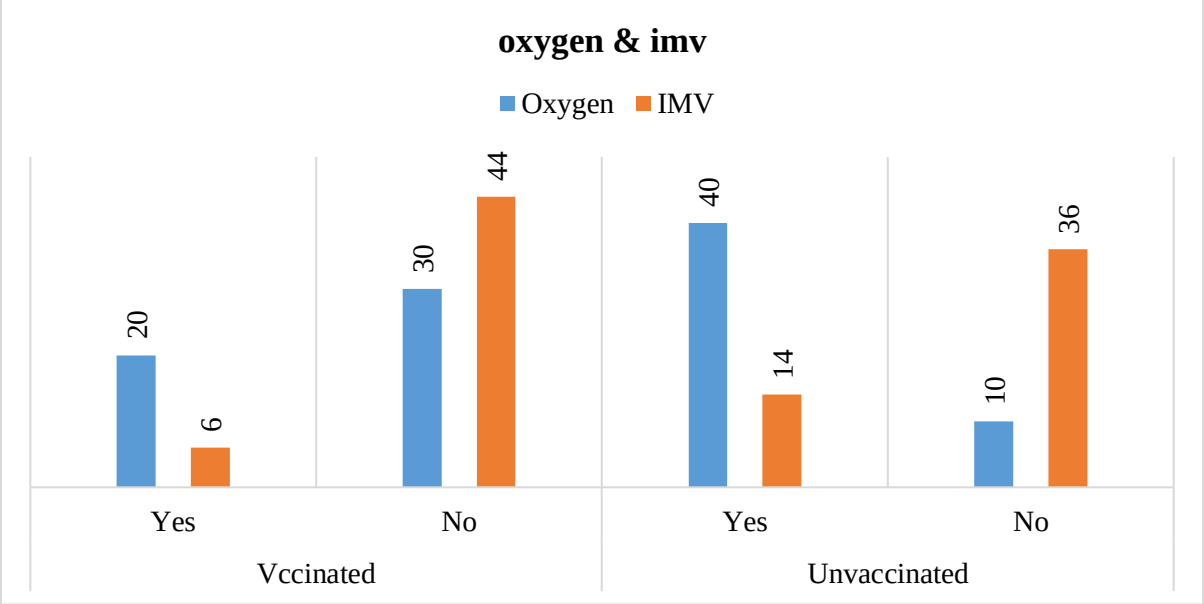
Initially 20 individuals with identified comorbidities were given preference for receiving COVID 19 vaccination, the above bar diagram showing that among 50 vaccinated patients, 33 had comorbidities.



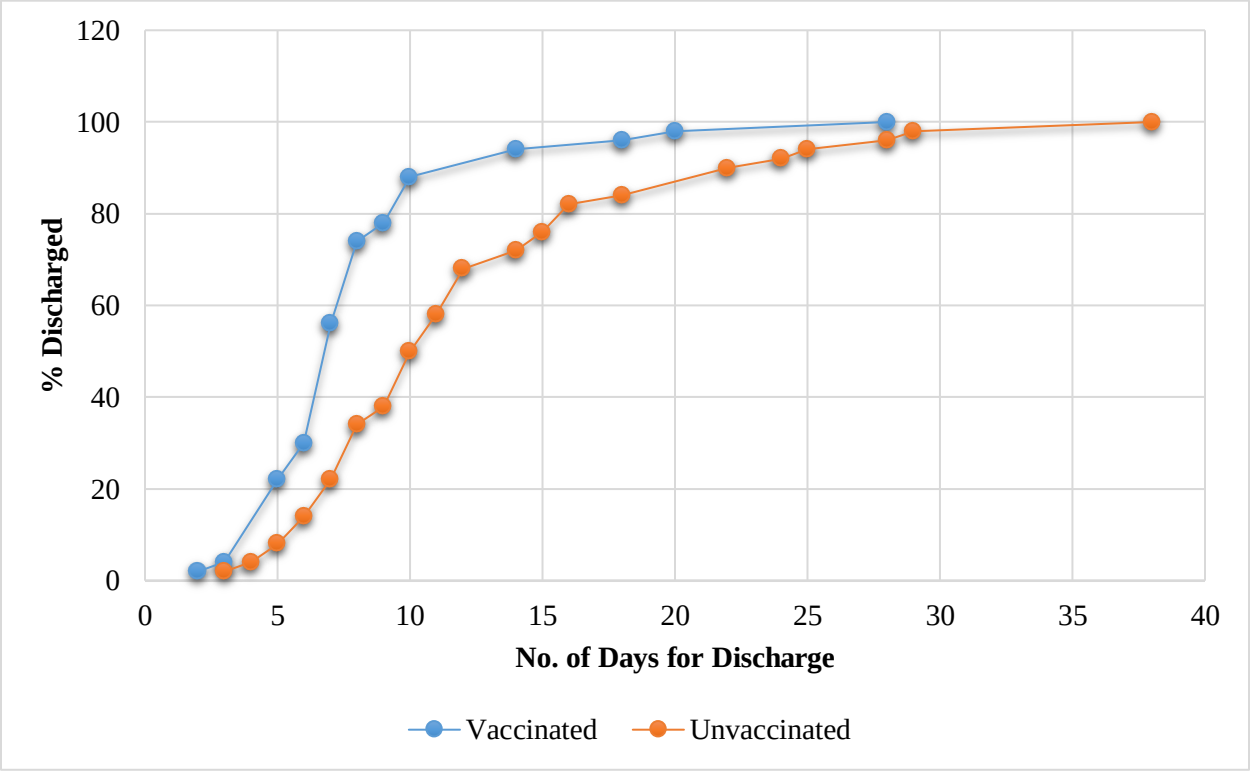
This bar diagram shows that the most of the vaccinated patients were having mild infections and unvaccinated patients were having moderated and severe infections. In this study, number of patients in moderate category was higher than number of mild and severe category patients. Among 40 mild category patients, 26 patients were vaccinated and 14 were unvaccinated. Among 18 severe category patients, 13 were unvaccinated and 5 were vaccinated.



In reported breakthrough infection patients, majority of the patients (58%) have contracted only mild infection.



Totally 60 patients were in need of non invasive oxygen support and 20 patients needed invasive mechanical ventilation(IMV).Among the 60patients who needed non invasive oxygen ,40 were unvaccinated and 20 were vaccinated. Among the patients with IMV ,14 were unvaccinated and only 6 patients were vaccinated.



The above graph shows that, among the patients who were discharged at the 10th day of hospital admission, 88% were vaccinated patients and 50% were unvaccinated patients.

DISCUSSION:

In the current study the data of 100 patients who have contracted SARS-CoV-2 infection and admitted in our institution were analyzed. Among the study population, 50 patients were vaccinated with one or two doses of either Covaxin or Covishield and the other 50 patients were unvaccinated for covid. Patients who have vaccinated with first dose alone were termed as partially vaccinated and those have received two doses vaccines were termed as completely vaccinated.42 patients were fully vaccinated and still contracted the SARS-CoV-2 infection. Breakthrough infection is 79% reported in our study. This is contradictory to lower incidence of breakthrough infection observed in Kanika Tyagi et al (13.3%).[1] This may be contributed by small sample size. A study conducted by Geetika Arora et al. among the indian population observed the breakthrough infection in 7.91% of vaccinated participants and most of the patients have contracted mild infection (41.83%).[6] The median age in vaccinated and unvaccinated patients are 58.54 and 51.08 respectively. Higher percentage of patients with comorbidities was noticed in vaccinated group and the most common comorbidities documented are Diabetes and Systemic hypertension as similar to a study by Geetika Arora et al.[6] In our study it appears that the breakthrough infection are mostly mild in natures (58%) and only 6% of patients have contracted severe infection as seen in a study conducted by Kanika Tyagi et al.[1] A hospital based observational study from Apollo hospital, India reported that 97.8% of vaccinated health care workers are protected from COVID-19 infection, and in only 0.06% patients, hospitalization was required, similar findings were observed in our study also ,more number of vaccinated patients were discharged at or before 10th day of admission when compared with unvaccinated group which shows the hospital stay duration was minimal among vaccinated patients.Totally 17 patients have died and most of them were Older patients with multiple comorbidities as similar to Geetika Arora et al. study.[6] It has been reported that vaccine effectiveness is generally lower in such groups.[7] The death rate is higher in unvaccinated group when compered with the vaccinated group (6 vaccinated patients and 11 unvaccinated patients have died).All the dead patients were severely infected and given non invasive mechanical ventilation support.

CONCLUSION:

Vaccination play an important role in developing herd immunity. Though vaccination does not provide 100% protection against COVID 19 infection, it reduces severity of infection and duration of hospitalization .As reported in many studies,the current study shows that COVID 19 breakthrough infections are less severe, the duration of hospital stay has decreased and the need for oxygen support is lesser in vaccinated patients when compared with unvaccinated patients. Due to the increased demand of oxygen support in COVID 19 pandemic especially in its second wave there were large casualties. It is vivid to reduce the demand for oxygen support and to reduce the disease severity which can be achieved by COVID 19 vaccines. Hence there is a need to educate the public about the effectiveness of the vaccine, its ability against acquiring severe COVID 19 infection and its associated hospitalization and death rate. Breakthrough infection and its related death have created a research gateway to find the various causative factors for its occurrence.

LIMITATIONS:

1. Small sample size,
2. Occupation of the patients who had breakthrough infections were not included in this study (health care workers and front line workers were at higher risks of acquiring infection),
3. Types of vaccines received were not included.

REFERENCES

1. Tyagi K, Ghosh A, Nair D, Dutta K, Bhandari PS, Ansari IA, Misra A. Breakthrough COVID19 infections after vaccinations in healthcare and other workers in a chronic care medical facility in New Delhi, India. Diabetes & Metabolic Syndrome: Clinical Research & Reviews. 2021 May 1;15(3):1007-8.
2. Pal R, Bhadada SK, Misra A. COVID-19 vaccination in patients with diabetes mellitus: Current concepts, uncertainties and challenges. Diabetes & Metabolic Syndrome: Clinical Research & Reviews. 2021 Mar 1;15(2):505-8.
3. Covid CD, Team VB, Birhane M, Bressler S, Chang G, Clark T, Dorough L, Fischer M,

Watkins LF, Goldstein JM, Kugeler K. COVID-19 vaccine breakthrough infections reported to CDC—United States, January 1–April 30, 2021. Morbidity and Mortality Weekly Report. 2021 May 5;70(21):792.

4. Indian Council of Medical Research (ICMR).COVID-19 vaccine. Available at: https://vaccine.icmr.org.in/covid-19-vaccine, Accessed 28th May 2021
5. Mhawish H, Mady A, Alaklobi F, Aletreby W, Asad T, Alodat M, Alharthy A, Abdulrahman B, Almahwi S, Memish ZA. Comparison of severity of immunized versus non-immunized COVID-19 patients admitted to ICU: A prospective observational study. Annals of Medicine and Surgery. 2021 Nov 1;71:102951.
6. Arora G, Taneja J, Bhardwaj P, Goyal S, Naidu K, Yadav SK, Saluja D, Jetly S. Adverse events and breakthrough infections associated with COVID-19 vaccination in the Indian population. Journal of Medical Virology. 2022 Jul;94(7):3147-54.
7. Dagan N, Barda N, Kepten E, Miron O, Perchik S, Katz MA, Hernán MA, Lipsitch M, Reis B, Balicer RD. BNT162b2 mRNA Covid-19 vaccine in a nationwide mass vaccination setting. New England Journal of Medicine. 2021 Feb 24.

How to Cite:
Dr. Suresh1 , Dr.Rammohan G2 , Dr. Ramesh Gopi3. (2022). OUTCOME OF VACCINATED AND UNVACCINATED COVID-19 PATIENTS IN A TERTIARY CARE HOSPITAL AT PUDUCHERRY. *International Journal of Medical Science in Clinical Research and Review*, *5*(06), Page: 1228–1234. Retrieved from https://ijmscrr.in/index.php/ijmscrr/article/view/415
http://doi.org/10.5281/zenodo.7741725